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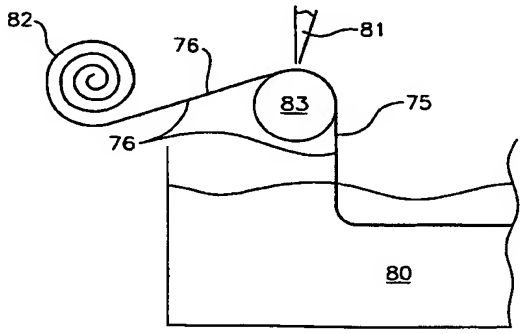
(54) Title: BACK-FLUSHABLE SPIRAL WOUND FILTER AND METHODS OF MAKING AND USING SAME



(57) Abstract: A spiral wound membrane filtration element capable of being back-flushed has a permeate carrier sheet; a permeable membrane filter layer sheet adhesively bonded to the permeate carrier sheet, and a feed spacer sheet. The membrane filter layer sheet folds over the feed spacer so that the feed spacer sheet is sandwiched between two layers of the membrane filter layer sheet. The sandwich positions over the permeate carrier sheet such that the adhesive seal bonds the membrane filter layer sheet to the permeate carrier sheet. The permeate carrier sheet, the membrane filter layer sheet, and the feed spacer sheet are wrapped around a permeate collection tube. The filter element is cleaned by pressurizing the feed solution or by creating a vacuum in the permeate collection tube, and periodically introducing a pressurized back flush fluid into the permeate collection tube of the filtration element to back-flush the membrane, under a pressure and for a time sufficient to dislodge a substantial portion of the retained solids on the surface of the membrane. The membrane filter layer sheet is made by placing a casting solution of a cetain thickness on a passing support substrate having a Frazier air permeability between 0.1 and 10 cfm/ft^2. The thickness of the casting solution on the support substrate is controlled through use of a mechanical device for dispensing the casting solution. The substrate with the casting solution is then immersed into a quench bath, to allow removal of casting solution, after an air quench time that allows formation of a thin membrane film on the support substrate.

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